EXHIBIT 20

DECLARATION OF ARTHUR LUPIA

I, Arthur Lupia, declare as follows:

1. I am the Interim Vice President for Research and Innovation at the University of Michigan ("U-M"). I have held that position since April 2024. Prior to that I served as an Assistant Director of the National Science Foundation from 2018-2022 and as co-chair of the White House Office of Science and Technology Policy's Subcommittee on Open Science from 2019-2021.

2. As Vice President for Research and Innovation, I have personal knowledge of the contents of this declaration, or have knowledge of the matters based on my review of information and records gathered by the University of Michigan personnel, and could testify thereto.

3. The University of Michigan receives substantial annual funding from the National Science Foundation ("NSF"). In Fiscal Year 2024, the University of Michigan received $169 million in NSF funding. Of these amounts approximately $119 million was allocated for direct costs and $50 million for indirect costs. In Fiscal Year 2025, the University of Michigan expects to receive $124 million in NSF funding for direct costs, with approximately $51.5 million allocated for indirect costs.

4. Over the next five years, the University of Michigan intends to submit highly competitive proposals that advance national priorities in innovative and cost-effective ways. These proposals will propel American leadership in vital areas of science and technology. Findings from this research will help create jobs across the country, strengthen national security, and fuel economic growth in fields like artificial intelligence, quantum computing, and advanced manufacturing The University of Michigan anticipates receiving an average of $133 million from

the NSF for annual direct costs per year for the next five years. Based on the predetermined indirect cost rate of 56%, which was agreed upon by the federal government as of July 1, 2024, the University thus expects to receive approximately $75 million in indirect cost recovery on an annual basis.

5. The funding the University of Michigan receives from NSF supports critical and cutting-edge research vital to our nation's security, the future of American industry – particularly where it involves advanced manufacturing, the safety and effectiveness of American supply chains, the resilience of American agriculture and its implications for millions of American farming families, American leadership in fast-moving areas like artificial intelligence and quantum computing, and the ability of American small businesses to create jobs more effectively. Millions of Americans benefit from and depend on this research. For example:

a. NSF-supported research at U-M's COMPASS Center develops advanced nanostructured composites critical for U.S. national defense, aerospace, and energy independence. Leveraging graph-theory design tools and AI-driven optimization of state-of-the-art High Performance Computing clusters, COMPASS delivers lighter, stronger, heat-resistant materials for hypersonic platforms, next-generation body armor, and grid-scale batteries. This work ensures American superiority in manufacturing and materials innovation. It safeguards national strategic interests against growing global competition, particularly from China and Russia. It also reduces reliance on imported cobalt, nickel, and rare-earth elements which makes vital American supply chains stronger and more resilient.

b. NSF-supported research at U-M's Center for Materials Innovation strengthens America's position in critical technology sectors, including quantum computing,

nanoelectronics, and energy-efficient systems. The center fabricates novel semiconductor heterostructures that enable fault-tolerant quantum processors, ultra-low-power AI accelerators, and high-speed 6 G/7 G wireless devices. These capabilities are essential levers for American leadership in vital technologies and strengthen the foundation of fast-evolving approaches to national security. By reducing dependence on foreign chip supply chains, this work increases American competitiveness and bolsters American technological independence in areas where we cannot afford to fall behind.

c. The NSF-supported highest-power ultra-fast laser system in the U.S., housed at UM's Zettawatt-Equivalent Ultrashort pules laser Systems ("ZEUS") facility, enables groundbreaking research into laser-driven particle accelerators and high-energy-density plasmas. ZEUS underpins compact cargo-inspection systems, next-generation radiation-therapy sources, and directed-energy component testing—applications vital to homeland security and defense. These technologies support national security, advanced medical therapies, and critical manufacturing processes, ensuring continued U.S. leadership in fields where international competitors are investing heavily.

d. UM's NSF Innovation-Corps Hub ("I-Corps") directly enhances national economic competitiveness by translating scientific discoveries into commercial technologies. This initiative accelerates the commercialization of roughly 500 federally funded inventions each year across sectors—manufacturing, defense, healthcare, and information technology. Teams graduating from I-Corps secure follow-on capital at four times the national average, keeping high-value start-ups and jobs in America. Serving as a critical innovation interface between academia and industry with over

6,200 participants annually, the program uniquely positions American innovators to keep our nation at the forefront of job creation and draws global investment to many of America's most promising new companies.

e. NSF-supported research at UM's MCity 2.0 test track advances connected and autonomous-vehicle (CAV) technologies critical for future transportation infrastructure, safety, and economic competitiveness. With NSF support, we created the world's first purpose-built proving ground for CAV testing. Using a cloud-based, mixed-reality platform that fuses physical vehicles with digital twins and real-time sensor feeds, MCity empowers American innovators to train, validate, and stress-test AI driving stacks under realistic traffic, weather, and various 5G connectivity conditions. The facility accelerates U.S. leadership in a rapidly evolving global transportation industry. MCity 2.0 significantly reduces development time and ensure that German and Chinese rivals do not dictate global AV standards.

f. The Panel Study of Income Dynamics (PSID) reveals the opportunities and challenges facing American families. Social, economic, and technical change is now a constant factor in the lives of American families. Farmers, factory workers, veterans, seniors, small business owners, and many more, experience these changes in different ways. The PSID is an invaluable resource for understanding how these changes affect them.

g. NSF-sponsored researchers at UM are leading development of the next-generation of artificial intelligence and quantum science. This work includes developing advanced statistical methods for interpreting complex network data that can enhance AI systems' ability to understand and analyze large-scale, interconnected data. Other projects improve AI methods for threat detection to mitigate potential risks in security

contexts. Quantum-focused projects develop numerical algorithms critical for quantum simulations to studying entangled quantum states by using ultracold atoms interacting with light to characterizing properties of quantum materials using physical strain. This topic is essential for understanding the usability and scalability of quantum approaches. Collectively, this work is essential to expanding American leadership in existing areas of computation, creating American leadership in newly evolving areas of computation, and upskilling American workers for the jobs that these approaches will create.

6. Reimbursement of the University of Michigan's indirect costs is essential for supporting this research. NSF's cutting of indirect cost rates to 15% would preclude or seriously jeopardize carrying out the kinds of research projects described in paragraph 5 in the future.

7. Indirect costs include constructing and maintaining state-of-the-art facilities required to meet the current technical requirements of advanced research, as well as the procurement and maintenance of specialized laboratory equipment necessary to conduct such research. These costs cover essential infrastructure like clean rooms, specialized testing environments, precision instrumentation, laboratory safety systems, calibration services, and technical support staff. Without these critical components, we simply cannot conduct the cutting-edge research that maintains American technological leadership and national security capabilities. Without this equipment, we cannot conduct the research.

8. For example, with respect to some of the research areas described in Paragraph 4:

a. NSF-supported work at U-M's COMPASS Center depends on the U-M Materials Characterization Center, which houses metallography stations, electron microscopes,

X-ray diffraction systems, and servo-hydraulic mechanical testers. Those tools give engineers hard data—grain size, defect maps, and failure modes—needed to certify that new nanocomposites will survive hypersonic skin temperatures and stop high-velocity projectiles, cutting months off DoD qualification schedules. High-performance computing in the U-M's Advanced Research Computing Center—equipped with GPU clusters optimized for AI workloads—runs graph-theory algorithms and analyzes large-scale datasets that trim design cycles from months to days. Without this analytical pipeline, COMPASS research on mission-critical nanocomposites would stall.

b. Semiconductor advances at UM's Center for Materials Innovation - Materials Research Science and Engineering Center ("CMI-MRSEC") rely on the Lurie Nanofabrication Facility, the Michigan Ion Beam Laboratory, and the Biointerfaces Institute Nanotechnicum. These precision-fabrication cleanrooms and beamlines build and harden gallium-nitride and silicon-carbide heterostructures that power quantum processors, ultra-low-power AI chipsets, and radiation-tolerant control electronics for missile-defense satellites. If any one of these facilities went dark, U.S. chip research would be forced offshore—an unacceptable supply-chain and security risk.

c. The ZEUS laser facility occupies roughly 15,000 ft^2 of clean rooms and radiation-shielded target areas containing large vacuum chambers and advanced diagnostic instrumentation, as well as thousands of optical components. These assets enable laser-plasma-accelerator experiments that underpin cargo-inspection prototypes and directed-energy material tests. A shutdown would erase the nation's sole ultra-high-

power laser user facility and hand Europe and China uncontested leadership in ultrafast-laser science.

d. UM's NSF Innovation-Corps Hub provides the administrative backbone—secure online courseware, state- and federal-compliance tracking, and fiscal systems—that trains more than 6,000 researchers a year across nine states. This infrastructure shepherds about 500 federally funded inventions annually to first-customer contact, quadrupling their odds of attracting private capital. Remove the backbone, and those inventions—and the jobs they spawn—would likely migrate to foreign investors.

e. UM's NSF-supported MCity 2.0 spans 32 acres of instrumented roadways, connected-vehicle radios, 5 G networking, mixed-reality control software, sensor-calibration labs, and safety-monitoring systems. Nation-wide users stream high-risk traffic scenarios to train and validate AI driving stacks against snow, glare, and spoofed signals—capabilities rival German and Chinese testbeds seek to match. Without continuous support for network upgrades and sensor calibration, U.S. companies would lose a critical edge in the race to define global autonomous-vehicle standards.

f. To conduct the PSID, U-M uses indirect costs to provide a range of facilities, services and support which are vital to the conduct of the study. This includes space to do the work; a secure and robust computing environment, which is critical to maintaining the integrity and confidentiality of the data collected from American families; and business services which include data management and processing.

9. Physical facilities costs are one of the largest components of indirect costs. This includes not only the usual costs of constructing and maintaining buildings where research occurs,

but the very high costs of outfitting and maintaining specialized laboratory space, which can require special security, advanced HVAC systems, and specialized plumbing, electrical systems and waste management, as well as specialized laboratory equipment. The features and amount of space available to researchers have a direct and obvious impact on the nature and amount of research that can be done at the University of Michigan. Without adequate indirect-cost recovery, immediate impacts would include:

a. Michigan Center for Materials Characterization — would face severe operational constraints: microscope shifts and sample-prep stations would be cut back, delaying COMPASS analysis of defense-critical nanocomposites. The slowdown would postpone lighter armor and hypersonic-skin materials, eroding U.S. leadership in advanced defense structures.

b. Advanced Research Computing Center (GPU cluster) — would be unable to fund scheduled rack and power-distribution upgrades; GPU expansion and cooling retrofits would pause, capping compute hours for AI-accelerated materials design, quantum-device simulation, and autonomous-vehicle perception work. Academic, government, and corporate users would fall behind foreign rivals that are scaling their compute capacity.

c. Lurie Nanofabrication Facility — would have to reduce clean-room shifts and defer tool calibration and maintenance, stalling gallium-nitride and silicon-carbide heterostructure runs for secure quantum processors, low-power AI chips, and radiation-tolerant control electronics. Prolonged slowdowns would push sensitive chip R&D offshore and weaken domestic manufacturing competitiveness.

d. ZEUS ultra-high-power laser facility — would face operational disruptions: radiation-containment system maintenance could not be completed on schedule, triggering safety issues that suspend the Nation's only user site for ultra-fast laser shots. A pause of even a few months would give Europe and China an uncontested opening in ultrafast-laser science.

e. NSF Innovation-Corps Hub space — would lose classroom, studio, and compliance capacity for more than 6000 researchers and 500 inventions each year. Smaller cohorts and slower audits would delay the launch of defense-tech and advanced-manufacturing start-ups, giving foreign investors first access to unlicensed U.S. intellectual property and undercutting American economic competitiveness.

f. Mcity 2.0 autonomous-vehicle test range — would face shortened operating hours and deferred resurfacing, sensor alignment, and 5G upgrades, compromising the Nation's ability to validate safe AI driving stacks. These cuts would slow domestic deployment and weaken U.S. influence over global mobility safety standards.

g. Absent sustained support for these facilities, research that underpins U.S. national security, economic growth, and technological competitiveness would slow or stop within weeks.

10. In addition, indirect costs fund the administration of awards, including staff who ensure compliance with a vast number of regulatory mandates from agencies such as NSF. These mandates serve many important functions, including ensuring research integrity; protecting research subjects; properly managing and disposing of chemical and biological agents and other materials used in research; managing specialized procurement and security requirements for sensitive research; managing funds; preventing technologies and other sensitive national security

information from being inappropriately accessed by foreign adversaries; providing the high level of cybersecurity, data storage, and computing environments mandated for regulated data; ensuring compliance with specialized security protocols and safety standards; maintaining facility accreditation and equipment calibration to meet research quality and security standards; and preventing financial conflicts of interest.

11. Recovery of the University of Michigan's indirect costs is based on predetermined rates that have been contractually negotiated with the federal government.

12. Through fiscal year 2025, the University of Michigan's predetermined indirect cost rate for research is 56%.

13. The impact of a reduction in the indirect cost rate would be devastating. Of the $169 million in NSF funding that the University of Michigan received in Fiscal Year 2024, approximately $119 million was allocated for direct costs and $50 million for indirect costs. This $49 million for indirect costs is lower than 56% of the $119 million for direct costs because the negotiated indirect rate of 56% only applies to the calculated modified total direct cost ("MTDC"), which is lower than the total direct costs. Similarly, in fiscal year 2025, the University of Michigan expects to receive $124 million in NSF funding for direct costs. Assuming the relative proportion of direct costs to MTDC remains constant, University of Michigan expects to receive $51.5 million in indirect costs for fiscal year 2025. And over the next five years, the University of Michigan anticipates receiving an average of $133 million from the NSF for annual direct costs. Based on the predetermined indirect cost rate of 56%, which was agreed upon by the federal government as of July 1, 2024, and assuming the relative proportion of direct cost and MTDC remains constant, the University thus expects to receive approximately $56 million in

indirect cost recovery on an annual basis based on application of that 56% negotiated rate to the expected MTDC.

14. If—contrary to what the University of Michigan has negotiated with the federal government—the indirect cost rate is reduced to 15%, that reduction over the next five years, if applied to the University's entire NSF portfolio, would reduce the University's anticipated annual indirect cost recovery by $36 million, to $20 million.

15. This reduction would have deeply damaging effects on the University of Michigan's ability to conduct research from day one. Many of the University of Michigan's current research projects will be forced to slow down or cease abruptly if we cannot apply for renewals at the negotiated 56% indirect cost rate. This will also necessarily and immediately result in staffing reductions across the board. For example:

a. Talent and Educational Pipeline Disruption – A sudden loss of support would prompt specialized researchers, technicians, and graduate students to leave for better-funded programs. Once the NSF-funded COMPASS, CMI-MRSEC, ZEUS, I-CORPS, MCity and PSID teams disperse, it would take many years to rebuild the AI-literate materials workforce, the quantum-device design bench, the data protection algorithms, and the autonomous-vehicle safety cadre that federal agencies rely on. Gaps of that length fracture the continuous mentorship and knowledge transfer required for leadership in defense materials, secure semiconductors, and AI-enabled mobility.

b. Laboratory Safety and Regulatory Risk – Facilities such as LNF cleanrooms, MC^2 microscopy suites, and the ZEUS laser halls depend on uninterrupted maintenance to manage hazardous chemicals, high-voltage systems, and radiation sources. A

funding interruption would force safety shut-downs; restarting would require new certifications from OSHA, NRC, and state regulators—a process that can take 12–24 months and millions of dollars per site. During that hiatus, unique national test capabilities would be unavailable to the Department of Defense ("DoD"), the Department of Energy ("DOE"), and industry users.

c. Infrastructure Deterioration and Restart Costs – Precision tools in the GPU cluster, nanofab, and microscopy facilities drift out of tolerance within weeks if HVAC, vibration isolation, and calibration contracts lapse. Replacing damaged electron-column lenses, ion-beam optics, and laser front-end crystals can top $10 million and involve multi-year lead times. In several cases—especially ZEUS optics—one-off components cannot be reordered, meaning lost capability becomes permanent.

16. The University of Michigan has for decades relied on the payment of indirect costs. And until now, we have been able to rely on the well-established process for negotiating indirect cost rates with the government to inform our budgeting and planning. Operating budgets rely on an estimate of both direct and indirect sponsored funding to plan for annual staffing needs (*e.g.*, post-docs, PhD students, and other research staff), infrastructure support (*e.g.*, IT networks, regulatory compliance, and grant management support), and facility and equipment purchases. And in some cases, the University of Michigan has long-term obligations—for example, long-term equipment maintenance contracts and service agreements, specialized technical staff positions in facilities supporting NSF research, debt service on research infrastructure investments and laboratory renovations; —and it relies on budgeted grant funding, including associated indirect cost recovery, to fulfill these commitments. This multi-year budgeting process also assumes the

availability or possibility of grant renewals at roughly similar terms – and certainly at the negotiated indirect cost rate – as had been previously available.

17. Disruptions to the University of Michigan's research will also have negative effects in the State of Michigan. Nearly 56,000 people are directly employed by the University of Michigan. The University works with and supports thousands of businesses, including many small businesses, to help solve regional challenges through joint research and innovation. The University of Michigan's research also fuels spending in the regional economy, including by driving discoveries that launch new ventures, attract private investment, and make a positive social impact. A massive reduction in the University of Michigan's research budget would immediately and seriously jeopardize these contributions to the local and regional economy.

18. In addition to the immediate effects and reliance interests described above, dramatically cutting indirect cost reimbursement would have longer-term effects that are both cumulative and cascading. We already see multiple signs of countries in Europe and Asia making direct appeals to our country's scientists to move their expertise and operations abroad. Younger scientists, whose work will do so much to influence the future of American leadership in science and technology are also receiving these inquiries in vital science and technology areas. Moreover, if U-M's composite, semiconductor, laser, and autonomous-vehicle programs stall, China, Japan, and the EU will fill the void. In the area of advanced materials, U-M's reduced capacity to advance American interests increases the risk that foreign armor and hypersonic-skin suppliers will capture key export markets. In semiconductors, U-M's reduced capacity increases the risk of offshore fabs being in a stronger position to design rules and other universal specifications for quantum and AI chips – which could affect the supply and integrity of semiconductors for US purposes. In the area of ultrafast lasers, U-M's reduced capacity risks European and Asian labs becoming the sole

venues for laser-plasma accelerator research. In the area of autonomous mobility, U-M's reduced capacity increases the risk that German and Chinese manufacturers will define global safety standards, relegating U.S. firms to standard-takers instead of standard-makers. Re-establishing lost ground in any of these areas would require a new generation of capital projects and global scientific recruiting drives—at costs that far exceed the indirect-cost support now at risk.

19. If the University of Michigan's can no longer apply for NSF grants because it is unable to accept the new indirect cost rate cap, the harms described herein would be exacerbated. That greater loss in funding from NSF would mean more significant cost-cutting measures would need to be adopted—and quickly. The University of Michigan cannot indefinitely "float" all of the indirect costs it would likely lose coverage for – nor could it float NSF grants altogether if it is not able to accept the 15% cap. As a result, research projects that are vital to economic growth, American leadership, and national security will need to be terminated, while others will have to be maintained at minimum levels. The process of identifying these cuts would need to begin immediately, and layoffs, closures, and research pauses or contractions would follow soon thereafter. Cutting back on the University of Michigan's research in fields such as artificial intelligence and quantum computing will also have long-term implications on national security and the American economy. The lives and prosperity of the American people depend on our country taking a strong, rigorous, and strategic approach to supporting vital areas of scientific research. For the sake of our fellow citizens, and for future generations of Americans, we cannot fall behind ever and we must not fall behind now.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on May 4, 2025, at Ann Arbor, Michigan.

Arthur Lupia